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| 09/741,857 | 12/22/2000 | Richard P. Modelski | 120-100 | 8573 |

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| EXAMINER | |
|---|---|
| TRUONG, LAN DAI T | |
| ART UNIT | PAPER NUMBER |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/741,857 | MODELSKI ET AL. | |
| | Examiner | Art Unit | |
| | LAN-DAI Thi TRUONG | 2152 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *16 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-3 and 5-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. This action is response to communications: application, filed on 12/22/2000; amendment filed on 06/16/2008. Claims 1-3 and 5-18 are pending; claims 1-3 and 5-6 are amended; claim 4 is cancelled.

2. Applicant's arguments filed 06/16/2008 have been fully considered, but are moot in view of the new ground(s) of rejection.

### Claim rejections-35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**3. Claims 1-3 and 5-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

***Regarding claim 1:***

The term "specialized" in claims 1 and 5 is a relative term which renders the claims indefinite. The term "specialized" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Without disclosures a standard for ascertaining the requisite degree for the term "specialized"; how would one of ordinary skill in the art determine the claim feature of "selecting a pipeline from a plurality of pipelines, at least some of which are specialized..." The corrections are required.

***Regarding claim 2-3, 5-18:***

Those claims are rejected under rationales of claim 1.

**Claim rejections-35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**Claims 1, 3, 5 and 17 are rejected under 35 U.S.C 103(a) as being un-patentable over Hooper (U.S. 2006/0156303) in view of Davis (U.S. 7,093,109) and further in view of Mang et al. (U.S. 7,111,156).**

***Regarding claim 1:***

Hooper discloses the invention substantially as claimed, including a method, which can be implemented in a computer hardware or software code for routing a data packet, comprising:

producing a plurality of threads associated with the packet: (Hooper discloses method of producing a number of threads for a data packet wherein each portion of the data packet is processed by different thread(s): abstract; [0003]; [0025]; [0085]).

processing of each packet is divided into multiple independent threads which are processed by multiple pipelines, and such that delay in processing of a first packet routing thread in a first pipeline does not affect processing of a second packet routing thread in a second pipeline: (Hooper discloses method of producing a number of threads for a data packet wherein each portion or unit of the data packet is processed by each different thread in parallel and independently: abstract; [0023]; [0003]; [0025]-[0027]; [0085]).

assigning a thread identifier (TID) to each of the threads and maintaining an activity status for each thread: (an table maintains number of thread identifiers in association with their activity statuses: Hooper, figure 2; figure 3, items S1, S2, S4; figure 5).

However, Hooper does not explicitly disclose each thread being a sequence of instructions that facilitates packet routing and independently executable with respect to other ones of the threads.

In analogous art, Davis discloses each of threads is process in independent executing a sequence of instructions, see (Davis, column 3, lines 49-51; column 4, lines 5-6, 9-11).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Davis's ideas of process each of threads in independent executing a sequence of instructions into Hooper's system in order to in crease efficiencies for multi-threads processing system, such as, to minimize the impact of latency in data process, see (Davis, column 1, lines 14-17).

However, Hooper-Davis does not explicitly disclose selecting a pipeline from a plurality of pipelines, at least some of which are specialized, and forwarding that thread to the selected pipeline.

In analogous art, Mang discloses a circuit, including a multiplier and adder, which capable to select and add next operation code into a sequence of ordered operation codes (efficient pipeline) which used for executing each of application threads, see (Mang, column 3, lines 63-67; column 4, lines 1-8, column 10, lines 32-37; column 11, lines 1-14).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Mang's ideas of selecting and adding next operation code into a

sequence of ordered operation codes (know as efficient pipeline) for executing each of application threads into Hooper-Davis's system in order provide an efficient multi-threads communication system with limited memory requirements, (Mang, column 1, lines 45-49).

***Regarding claim 5:***

Hooper discloses the invention substantially as claimed, including an apparatus, which can be implemented in a computer hardware or software code for routing a data packet, comprising:

a memory for storing: (Hooper, [0025]).

a plurality of threads associated with the packet: (Hooper discloses method of producing a number of threads for a data packet wherein each portion of the data packet is processed by different thread(s): abstract; [0003]; [0025]; [0085]).

a unique Thread Identifier (TID) for each thread; an activity status for each thread: (an table includes information of thread identifiers in association with activity status for each thread: Hooper, figure 2; figure 3, items S1, S2, S4; figure 5).

processing of each packet is divided into multiple independent threads which are processed by multiple pipelines, and such that delay in processing of a first packet routing thread in a first pipeline does not affect processing of a second packet routing thread in a second pipeline: (Hooper discloses method of producing a number of threads for a data packet wherein each portion or unit of the data packet is processed by each different thread in parallel and independently: abstract; [0023]; [0003]; [0025]-[0027]; [0085]).

However, Hooper does not explicitly disclose each thread being a sequence of instructions that facilitates packet routing and that is independently executable with respect to other ones of the threads.

In analogous art, Davis discloses each of threads is process in independent executing a sequence of instructions, see (Davis, column 3, lines 49-51; column 4, lines 5-6, 9-11).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Davis's ideas of process each of threads in independent executing a sequence of instructions into Hooper's system in order to in crease efficiencies for multiple threads processing system, such as, to minimize the impact of latency in data process, see (Davis, column 1, lines 14-17).

However, Hooper-Davis does not explicitly disclose an analysis machine including a plurality of pipelines, at least some of which are specialized, the analysis machine selecting a pipeline for each thread and forwarding that thread to the selected pipeline such that.

In analogous art, Mang discloses a circuit, including a multiplier and adder, which capable to select and add next operation code into a sequence of ordered operation codes (know as efficient pipeline) for executing each of application threads, see (Mang, column 3, lines 63-67; column 4, lines 1-8, column 10, lines 32-37; column 11, lines 1-14).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Mang's ideas of selecting and adding next operation code into a sequence of ordered operation codes (know as efficient pipeline) for executing each of application threads into Hooper-Davis's system in order provide an efficient multi-threads communication system with limited memory requirements, (Mang, column 1, lines 45-49).

***Regarding claim 3:***

In addition to rejection in claim 1, Hooper-Davis-Mang further discloses the activity status indicates that a status of the associated thread is one of active, inactive or waiting: (Hooper, figure 2; figure 3, items S1, S2, S4; figure 5).

***Regarding claim 17:***

In addition to rejection in claim 5, Hooper-Davis-Mang further discloses the activity status indicates that a status of the associated thread is one of active, inactive or waiting: (Hooper, figure 2; figure 3, items S1, S2, S4; figure 5).

**Claim 2 is rejected under 35 U.S.C 103(a) as being un-patentable over Hooper-Davis-Mang in view of Epps et al. (U.S. 6,813,243).**

***Regarding claim 2:***

Hooper-Davis-Mang discloses the invention substantially as disclosed in claim 1, but does not explicitly teach steps of transferring the multi-IP packet thread from an input buffer to a packet task manager; dispatching the multi-IP packet thread from the packet task manager to an analysis machine; classifying the multi-IP packet thread in the analysis machine; and modifying and forwarding the multi-IP packet thread in a packet manipulator.

In analogous art, Epps teaches methods for transferring data from an input buffer (Fig 2, item 215) to a packet task manager (Fig 2, items 130, 285, 280; figure 4; column 7, lines 10-44; Column 5, lines 50-55); dispatching the data from the packet task manager to an analysis machine (figure 4; column 7, lines 44-67); classifying the data in the analysis machine (Column 6, lines 33-37); and modifying and forwarding the data in a packet manipulator (figure 4; column

7, lines 44-67); a packet manipulator (Epps, Figure 4, items 450, 460) operationally connected to said analysis machine (Epps, Figure 4).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Epps's those ideas into Hooper-Davis-Mang's system in order to increase efficiencies for data transmission network (e.g. maximum transmission speed), see (Epps: column 3, lines 5-7, lines 40-45).

**Claims 6-16 and 18 are rejected under 35 U.S.C 103(a) as being un-patentable over Hooper-Davis-Mang in view of Epps et al. (U.S. 6,813,243) and further in view of Fleck et al. (U.S. 6,292,845).**

***Regarding claim 6:***

Hooper-Davis-Mang discloses the invention substantially as disclosed in claim 5, but does not explicitly teach a packet manager operatively connected to analysis machine; and packet manipulator operationally connected to said analysis machine.

In analogous art, Epps discloses a packet task manager (Epps, Figure 2, item 130, Column 5, lines 50-55) operationally connected to said analysis machine (Epps, Figure 2; Column 6, lines 33-37); a packet manipulator (Epps, Figure 4, items 450, 460) operationally connected to said analysis machine (Epps, figure 3; fig 4, column 15, lines 32-67; column 7, lines 12-67; column 8, lines 1-67; column 9, lines 1-67; column 10, lines 1-67).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Epps's those ideas into Hooper-Davis-Mang's system in order to increase efficiencies for data transmission network (e.g. maximum transmission speed), see (Epps: column 3, lines 5-7, lines 40-45).

However, Hooper-Davis-Mang - Epps does not explicitly disclose a machine having multiple pipelines; wherein one pipeline is dedicated to directly manipulating individual data bits of a bit field.

In analogous art, Fleck's system including multiple pipelines: (column 3, lines 61-67; column 4, lines 1-67; column 5, lines 59-62; column 6, lines 7-34).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Fleck's ideas of including multiple pipelines into Hooper-Davis-Mang - Epps's system in order to increase efficiencies for data transmission system, see (Fleck: column 3, lines 61-67).

***Regarding claim 7:***

In addition to rejection in claim 6, Hooper-Davis-Mang - Epps- Fleck further discloses the activity status indicates one of active, inactive or waiting: (Hooper, figure 2; figure 3, items S1, S2, S4; figure 5).

***Regarding claim 8:***

In addition to rejection in claim 6, Hooper-Davis-Mang - Epps- Fleck further discloses 32 threads, although Hooper-Davis-Mang - Epps- Fleck does not specifically disclose analysis machine has 32 threads, such limitations are merely a matter of design choice and would have been obvious in system of Hooper-Davis-Mang - Epps- Fleck.

***Regarding claim 9:***

In addition to rejection in claim 6, Hooper-Davis-Mang - Epps- Fleck further discloses a packet task manager (Epps, Figure 2, item 130; Column 5, lines 50-55) operationally connected to said analysis machine (Epps, Figure 2; Column 6, lines 33-37); a packet manipulator (Epps,

Figure 4, item 450, 460) operationally connected to said analysis machine (Epps, Figure 4); a global access bus including a master request bus (Epps, Figure 4, item 496) and a slave request bus (Epps, Figure 4, item 497) separated from each other and pipelined (Epps, Figure 4, items 410-460).

***Regarding claim 10:***

In addition to rejection in claim 6, Hooper-Davis-Mang - Epps- Fleck further discloses an external memory engine (Figure 4, item 215) operationally connected to said analysis machine (Epps, Figure 4, item 420; Column 6, lines 30-35) wherein the analysis machine classifies packet data; a hash engine (Epps, Figure. 4, item 430; Column 24, lines 24-28) operationally connected to said analysis machine (Epps, Column 24, lines 24-48).

***Regarding claim 18:***

In addition to rejection in claim 9, Hooper-Davis-Mang - Epps- Fleck further discloses a bi-directional access port operationally connected to said analysis machine (Epps, Column 25, lines 1-7, wherein the input/output port are PPP/HDLC); an input buffer (Epps, Figure 2, item 215) operationally connected to said analysis machine (input buffer operationally connected to Prep Stage: Figure 4, item 420 / analysis machine through the pipeline); and an output buffer (Epps, Fig 2, item 1430) operationally connected to said analysis machine (transmit FIFO operationally connected to Prep Stage Figure 4, item 420 through the switch fabric).

***Regarding claim 11:***

In addition to rejection in claim 9, Hooper-Davis-Mang - Epps- Fleck further discloses packet input global access bus program code, stored in a computer readable memory and

operable when executed to control a flow of data packet information from a flexible input data buffer to the analysis machine (Epps: Column 4 44, lines 60-67; Column 45, lines 1-15).

***Regarding claim 12:***

In addition to rejection in claim 9, Hooper-Davis-Mang - Epps- Fleck further discloses packet data global access bus program code, stored in a computer readable memory and operable when executed to control a flow of packet data between a flexible data input bus and the packet manipulator: (Mang, column 3, lines 63-67; column 4, lines 1-8, column 10, lines 32-37; column 11, lines 1-14).

***Regarding claim 13:***

In addition to rejection in claim 9, Hooper-Davis-Mang - Epps- Fleck further discloses statistics data global access bus software code used for connection of the analysis machine to the packet manipulator: (Mang, column 3, lines 63-67; column 4, lines 1-8, column 10, lines 32-37; column 11, lines 1-14).

***Regarding claim14:***

In addition to rejection in claim 9, Hooper-Davis-Mang - Epps- Fleck further discloses private data global access bus software code used for connection of the analysis machine to an internal memory engine sub-module: (Mang, column 3, lines 63-67; column 4, lines 1-8, column 10, lines 32-37; column 11, lines 1-14).

***Regarding claim 15:***

In addition to rejection in claim 9, Hooper-Davis-Mang - Epps- Fleck further discloses lookup global access bus software code used for connection of the analysis machine to an

internal memory engine sub-module: (Mang, column 3, lines 63-67; column 4, lines 1-8, column 10, lines 32-37; column 11, lines 1-14).

***Regarding claim 16***

In addition to rejection in claim 9, Hooper-Davis-Mang - Epps- Fleck further discloses results global access bus software code used for providing flexible access to an external memory: (Mang, column 3, lines 63-67; column 4, lines 1-8, column 10, lines 32-37; column 11, lines 1-14).

**Conclusions**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**Conclusions**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan-Dai Thi Truong whose telephone number is 571-272-7959. The examiner can normally be reached on Monday- Friday from 8:30am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A. Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

10/12/2008.

/Kenny S Lin/

Primary Examiner, Art Unit 2452